INSTRUCTION MANUAL

FOR THE

MORSE

FOTOMATIC III ZIGZAG MACHINE

AUTOMATIC

BUTTONHOLE-BLIND STITCH-TWIN NEEDLE

MODEL 4300

INTRODUCTION

In 1948, Mr. Philip S. Morse and his associates began to design a new type of zigzag sewing machine, specifically for the American woman, which would combine superb mechanical quality with maximum simplicity of operation. Above all, its operations could be easily understood through the miracle of the **FOTOMATIC®** system.
The first **MORSE FOTOMATIC®** was a sensational success with its pictures on a screen of "the stitch you select . . . . . before you start to sew". The **FOTOMATIC® III** is a proud new development in this famous line!

A machine of graceful lines and matchless design, the **FOTOMATIC® III** adds to the already famous MORSE innovations automatic buttonholes, automatic blind stitches, true double needle sewing, and a wide variety of design patterns without the need for, or cost of, expensive cams.

The **FOTOMATIC® III**, as were its predecessors in the precision built **MORSE** line, is manufactured at the great, modern TOYOTA factory at Nagoya, Japan, one of the world's vital industrial centers. From the molten steel of the foundry to the thermostatically controlled paint and finish rooms, the **TOYOTA** factory is the finest of its kind and the envy of sewing machine manufacturers the world over. All **MORSE** machines are built to the most exacting specifications, and the rigid quality control program which governs their manufacture is such that the quality and design of every machine is guaranteed for a lifetime of pleasurable sewing.

Electrical components such as the control, light bulb, wiring . . . . . and portable cases, furniture and attachments are made in our affiliated factories in the United States. Complete units are assembled and rechecked at our distribution plants in Los Angeles and New York. Every **MORSE** distributor is thoroughly qualified to render expert factory service . . . . . and all moving or wearing parts such as needles, bobbins, bobbin cases, hooks, etc., are standard and interchangeable with parts immediately available at sewing machine stores the world over.

Please read this illustrate manual carefully. It is your assurance that you will get the most out of your MORSE.

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REFERENCE GUIDE FEATURES AND PARTS

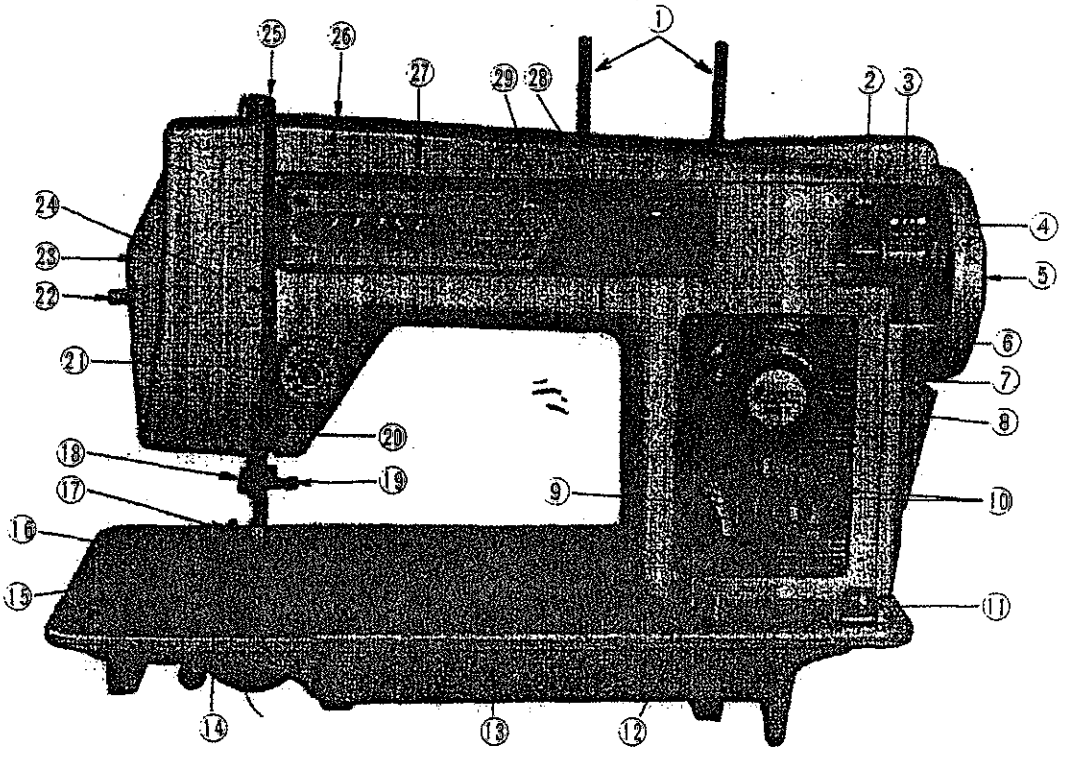


Fig. 1 **Feature and Parts you should know**
Front View

1. Spool Pins
2. Bobbin Winder Spindle
3. Bobbin Winder Lever
4. Balance Wheel
5. Stop Motion Knob
6. Stitch Length Window
7. Stitch Length Dial
8. Reverse Push-button
9. Zig-zag Width Lever
10. Stop Locks
11. Bobbin Winder Thread Guide
12. Fabric Selector
13. Bed
14. Slide Plate
15. Needle Plate
16. Presser Foot
17. Presser Foot Thumb Screw
18. Needle Bar Thread Guide
19. Needle Clamp Screw
20. Lower Face Plate Thread Guide
21. Thread Tension Dial
22. Push-button Light Switch
23. Face Plate
24. Take-up Lever
25. Automatic Darner
26. Upper Arm Thread Guide
27. Top Cover
28. Fotomatic Selector Lever
29. Fotomatic Window

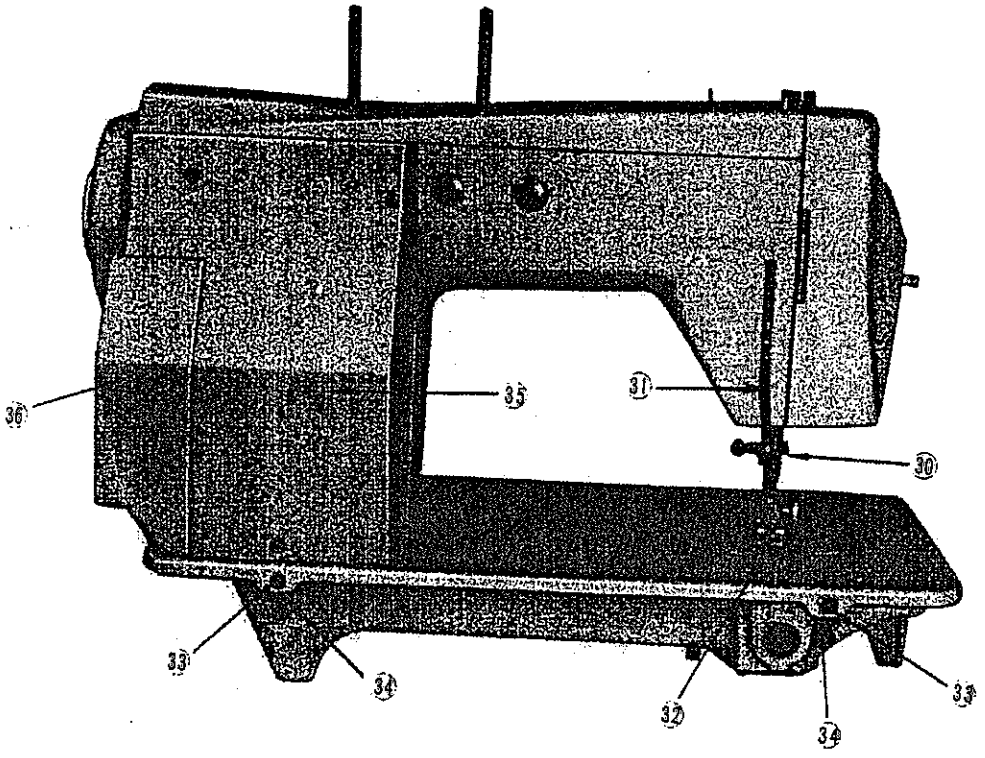


Fig. 2 Features and Parts you should know
Back View

30. Thread Cutter
31. Presser Bar Lifter
32. Feed
33. Hinge Holes
34. Hinge Set Screws
35. Motor Cover (A)
36. Motor Cover (B)

Please read this illustrated manual carefully. It is your assurance that you will get the most out of your MORSE FOTOMATIC III.

TO REPLACE THE NEEDLE

The Morse Zig-Zag uses standard 15 × 1 needles, available at all sewing machine stores (For correct size, consult chart on Page 7).

To replace the needle, raise the needle bar to its highest point by turning the balance wheel TOWARD YOU by hand. Loosen the needle clamp screw (A) on the right hand side and the needle clamp will open, allowing the old needle to fall out.

Remove the old needle and slide the new needle up (FLAT SIDE FACING TO THE REAR) **as far as it will go.** When the needle hits the stop it is in position correctly. Now fasten the needle clamp securely. For best results change needles frequently.

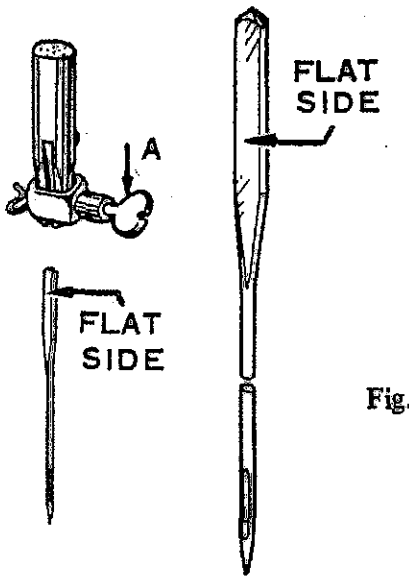


Fig. 3

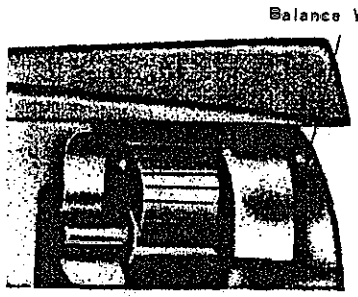


Fig. 4

NEEDLES AND THREAD

Never use a bent needle, nor one with a blunt point, since this causes imperfect stitches and may cause the needle to break. Unless the needle is in CLEAR TO THE STOP, FLAT SIDE FACING TO THE REAR, the machine will be out of "time", and skipped or imperfect stitches will result and needles may break.

The size of the needle should conform to the size of the thread and both should be suitable to the material. Use a needle sufficiently large to permit the thread to pass freely through the eye. In general sewing, use the same size thread in the bobbin as is used on top. For detailed information consult chart on Page 7.

The following table will show you the size of needles generally used with various sizes of thread. The size or grade refers to the "eye" of the needle. All sizes are 15 × 1 class, available wherever needles are sold.

NEEDLE AND THREAD SIZES

Sizes & Grades of Needles	Type of Fabric and Work to be Done	SIZE OF THREAD		
		Cotton	Silk	Linen
11 (Medium-Fine)	Medium light-weight and summertime fabrics. For house dresses, children's dresses, washable cotton dresses, aprons, curtains.	80 to 100	0 Twist	
14 (Medium)	Dress silks and cottons, light weight woolens, draperies, fabric furnishings. For general household sewing, fine mens' shirts, smocks, window draperies and fabric decorations.	60 to 80	A & B Twist	
16 (Light-Heavy)	Heavy cretonne, madras, muslin, brocades and quilts. For mens' work shirts, sturdy smocks and aprons, heavy quilting and fabric furnishings.	40 to 60	C Twist	
18 (Medium-Heavy)	Heavy woven coating, light weight canvas, bed ticking, upholstery and awning materials, slip-cover fabrics. For work or sports uniforms, suits made of strong linen or cotton fabrics, awnings, slip covers and mattresses.	30 to 40	D Twist	
19 (Heavy)	Heavy woven suiting, coating, duck, ticking, drilling, canvas and sacking. For heavy wash uniforms, bedding supplies for hospitals, hotels and camps.	10 to 30	E Twist	60 to 80
21 (Extra-Heavy)	For bags, canvas, coarse cloths and heavy goods.	Very Coarse		40 to 60

When doing embroidery work, finer results will be obtained with machine embroidery thread regardless of the weight of fabric.

THE BOBBIN CASE

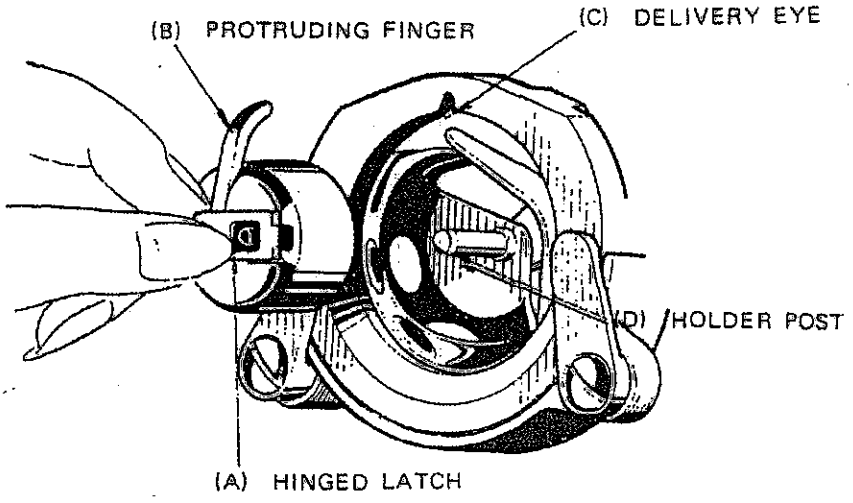


Fig. 5

IMPORTANT: In the following operations the needle must always be ABOVE the surface of the machine. Raise the needle by turning balance wheel TOWARD YOU by hand.

REMOVING THE BOBBIN CASE

Open the slide plate (Fig. 7) by sliding it out. With left thumb and forefinger, open the hinged latch (A) (Fig. 5) at the front of the bobbin case and hold securely as you withdraw bobbin case from around the holder post (D) When held in the above manner the bobbin will not fall out of the bobbin case.

INSERTING THE BOBBIN CASE

After winding a fresh bobbin and threading the bobbin case (see Pages 9 and 10), hold the bobbin case latch with left thumb and forefinger, (as explained above) to prevent the bobbin from falling out. Keeping the protruding finger (B) topside toward the delivery eye (C), press the bobbin case around the holder post until the finger enters the delivery eye. When in correct position a stud on the holder post will catch the latch mechanism holding the bobbin case firmly in place. This operation is easy — NEVER FORCE IT. The three or four inches of thread hanging free from the bobbin case will be brought up through the needle plate hole as shown on Page 12.

WINDING THE BOBBIN

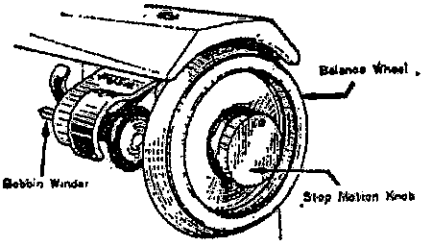


Fig. 6

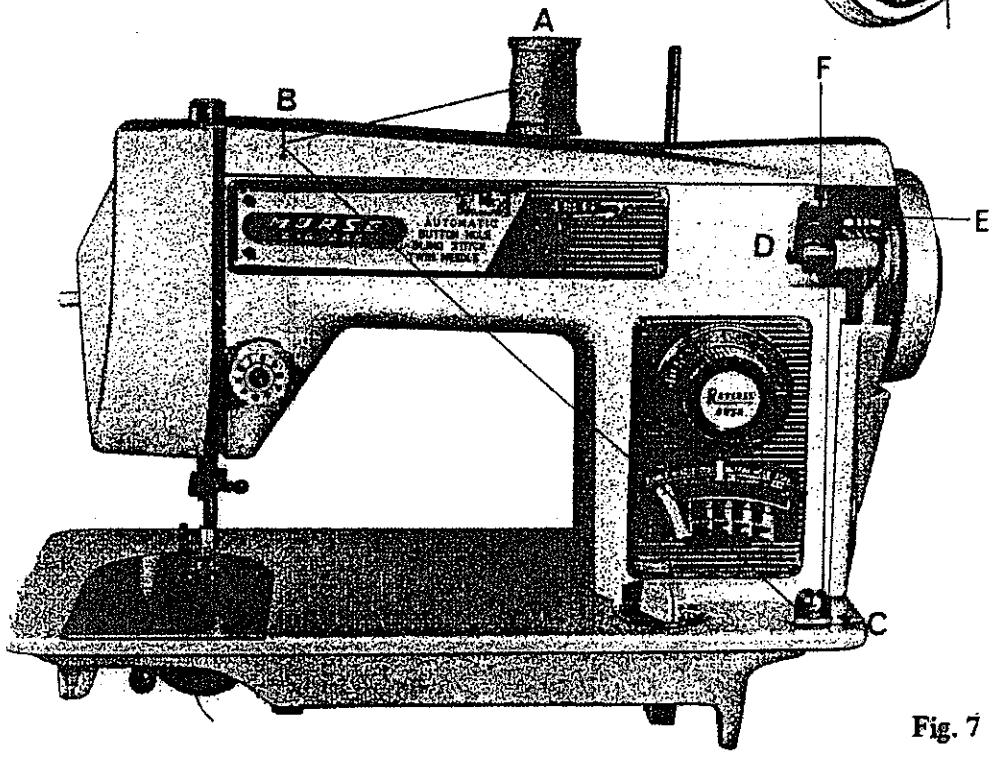


Fig. 7

Note: The MORSE FOTOMATIC III uses standard 15 class bobbins available at all sewing stores.

Holding the balance wheel with the left hand, loosen the balance wheel by turning the stop motion knob toward you (Fig. 6). This will permit the balance wheel to turn freely while the needle bar remains motionless. Place a spool of thread on the spool pin (A). Pass the thread through the upper arm thread guide (B) and the tension discs (C) at right corner of the base of the machine. Now wind the end of the thread around an empty bobbin seven or eight times and place the threaded bobbin on the spindle (D) of the bobbin winder. Press the bobbin onto the spindle with the left hand, making sure that the PIN on the spindle fits into the SLOT in the bobbin. Push the bobbin winder lever (E) down until the small rubber wheel presses against the hub of the balance wheel and the clasp (F) falls between the sides of the bobbin, holding it in position. Turn the balance wheel toward you by hand and proceed to operate the rheostat control, as in sewing. When the bobbin is full, it will release automatically and stop turning. Break off the thread and detach the bobbin from the spindle. Hold balance wheel firmly with left hand and with right hand turn the stop motion knob away from you until the machine is tight and the needle bar moves with the turning of the balance wheel.

TO THREAD THE BOBBIN CASE

Hold the bobbin case between the left thumb and forefinger with the slot up. With 5 or 6 inches of thread trailing in the palm, hold the bobbin between the thumb and first two fingers of the right hand. Fig. 8

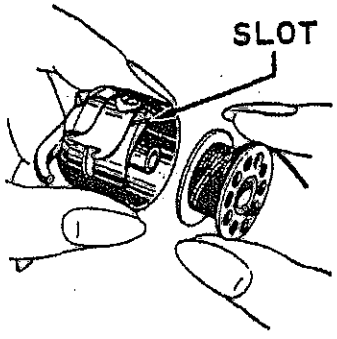


Fig. 8

Insert the bobbin into the bobbin case and pull the trailing thread into the slot, down and to the left until it enters the delivery eye under the tension spring. Fig. 9

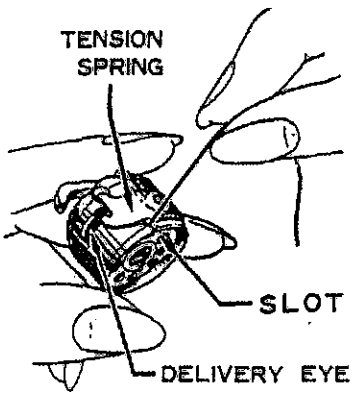


Fig. 9

There should be a slight tension on the thread as it is pulled through the delivery eye and the bobbin should unwind freely. The tension may be increased by turning the tension screw to the RIGHT and decreased by turning the screw to the LEFT. Fig. 10

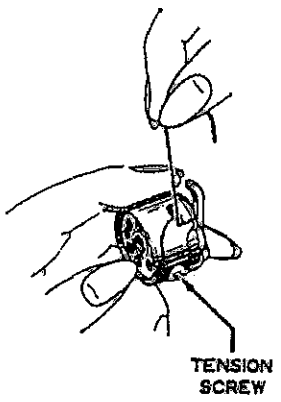


Fig. 10

THREADING THE MACHINE

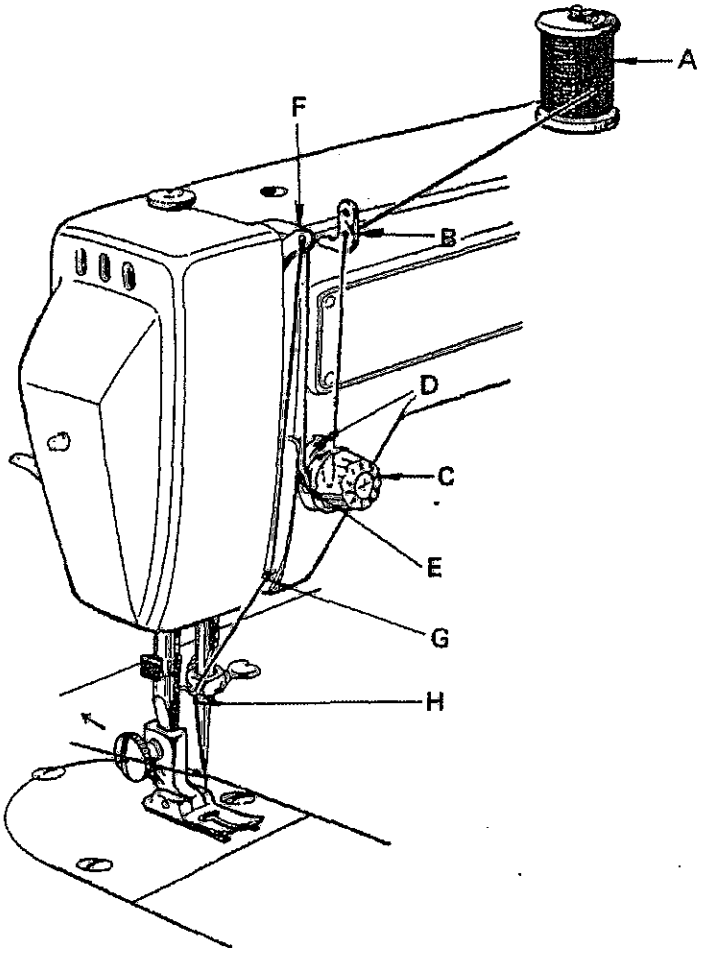


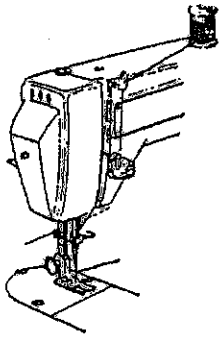
Fig. 11

1. Place a spool of thread on spool pin (A).
2. Lead thread through thread guide (B).
3. Pull the thread down and back UP through the tension discs (C) from right to left.
4. With the right thumb and forefinger hold the thread at a point between A and B. With the left hand pull the thread UP under the check spring (E) until it pulls back into the horn (D). The thread will now come over the metal horn, down and under the check spring.
5. Take the thread up, running the end through the eye of the take-up lever (F) from right to left.
6. Now run the thread down through thread guide (G) and through needle bar thread guide (H).
7. Run the end of the thread through the eye of the needle FROM FRONT TO BACK, drawing through about six inches.

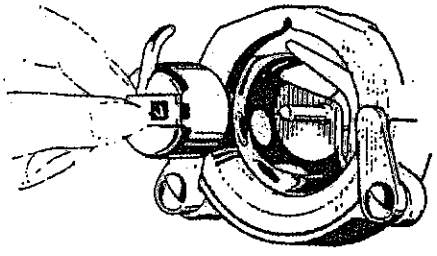
DOUBLE NEEDLE THREADING

1. Use one spool pin for each spool of thread.
2. Thread threads separately through thread guide (B).
3. Each thread is passed between its own pair of tension discs (C).
4. Follow the above procedure until you reach the double needle and thread each eye with separate threads.

D PREPARE FOR SEWING



a. Thread the machine as shown on Page 11.



b. Insert full bobbin as shown on Page 8.

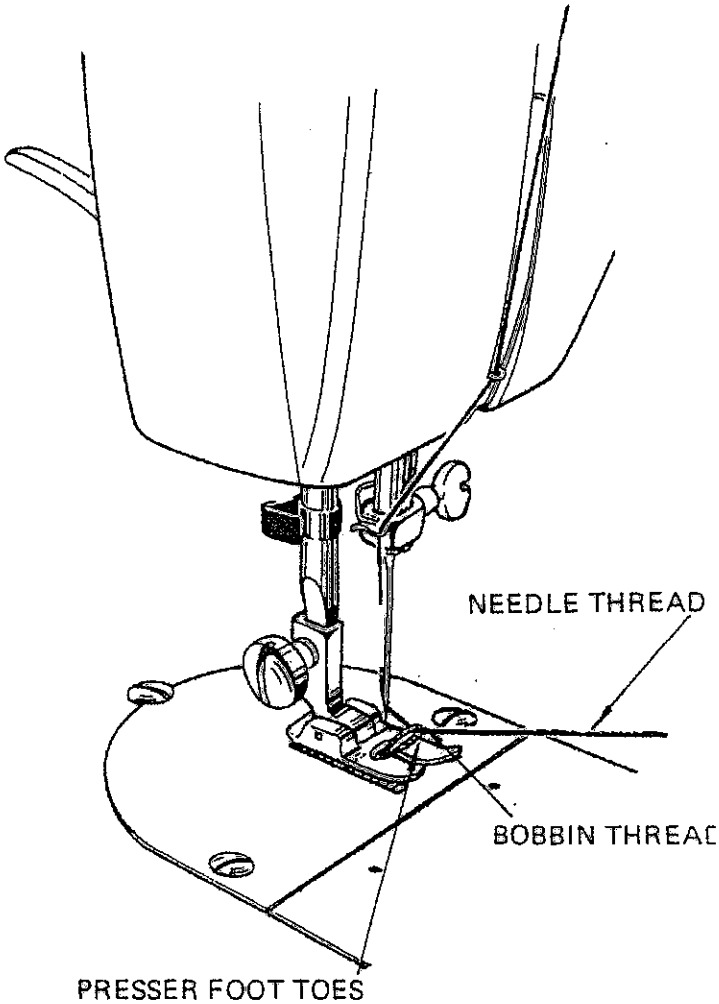


Fig. 12

c. PICK UP BOBBIN THREAD AS FOLLOWS: [

Holding the loose end of the needle thread in your left hand, turn the balance wheel toward you by hand until the needle moves down and up again to its highest point. Pull the needle thread gently and the bobbin thread will come up with it through the needle hole (Fig. 12). If the bobbin thread does not rise, check to see if at least 3 or 4 inches of bobbin thread is hanging loosely from the bobbin case.

THEN PLACE BOTH ENDS OF THE THREAD BACK BETWEEN THE TWO PRESSER FOOT TOES (Fig. 12).

TO START SEWING

With the needle raised and the threads drawn back, at least 4 inches through the toes of the presser foot, place the material to be sewn beneath the presser foot, and lower the presser foot lever as far as it will go. Insert needle into material by turning the balance wheel **TOWARD YOU** from top down, by hand. Regulate stitch to desired size. (see Page 14) and start sewing.

Do not try to help the feeding of the work by pulling the material, as this may bend the needle and cause it to blunt or break. As the machine feeds without any assistance, it is sufficient merely to guide the fabric gently, by hand in the direction you want it to be sewn.

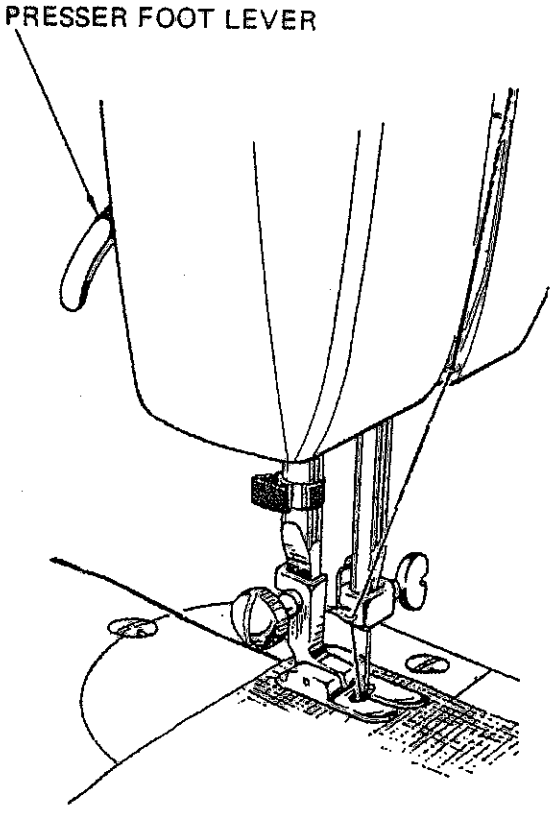


Fig. 13

TO REMOVE THE WORK

Stop the machine by releasing the pressure on the rheostat control and stopping the balance wheel with the right hand. Raise the needle to its highest point and raise the presser foot by lifting the presser foot lever with either hand. Now draw the sewn fabric back and to the LEFT about eight inches and break or cut the trailing threads.

Note: **When the presser bar is lifted, the upper thread tension is automatically released.**

TO REGULATE THE LENGTH OF STITCH

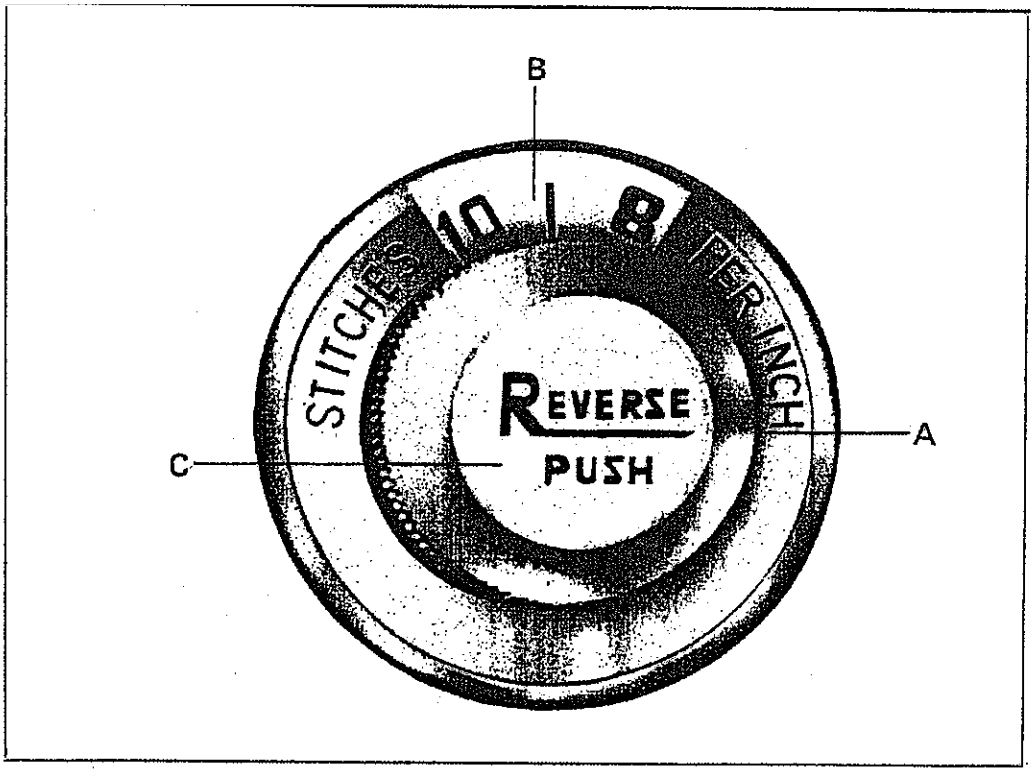


Fig. 14

The new MORSE push-button forward reverse mechanism makes it possible to get precise, even length stitches with a simple twist of the dial (A). Besides this, you always see the stitch ..... **before you sew.** The red indicating line across Window B shows the number of stitches per inch you have selected. The lower Numbers are longer stitches; the higher numbers are smaller stitches.

As you turn Dial (A) clockwise, toward the smaller stitches, a picture appears showing the satin stitch for zigzag sewing, as in buttonholes, design patterns, etc.

Note: We recommend testing your stitch on a sample of the material to be sewn since the stitch length varies with different materials.

TO SEW IN REVERSE just press the Reverse Button (C) in as far as it will go. Continue to press reverse button as long as you wish to sew in reverse. When released, the machine will automatically return to forward stitching. The forward and reverse stitches will be of equal length.

For heavy sewing as well as pattern making, a larger stitch is recommended. For fine work, silk or nylon, smaller stitches are best.

NOTE: Never sew or use machine in zero position.

TENSIONS

Forp erfect stitching, the tension on the upper and under threads should be equal, and just sufficiently strong to lock both threads in the center of the work (Fig. 15).

If the tension on the needle thread is too tight, or if that on the bobbin thread is too loose, the needle thread will lie straight along the upper surface of the material, making an imperfect stitch (Fig. 16).

If the tension of the bobbin thread is too tight, or if that on the needle thread is too loose, the bobbin thread will lie straight along the under side of the material, making an imperfect stitch (Fig. 17).

ALWAYS BE SURE THAT YOUR STITCHES LOOK LIKE FIG. 15.

Fig. 15

Fig. 16

Fig. 17

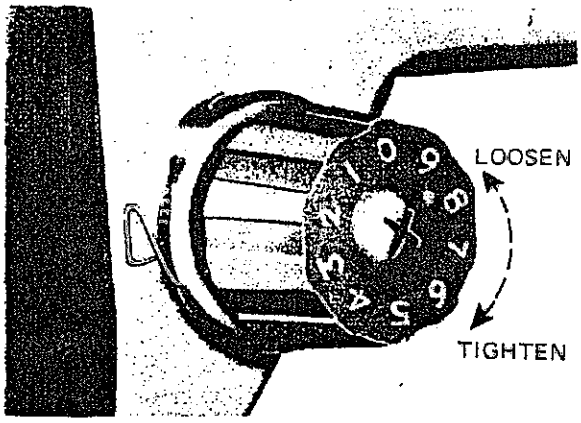


Fig. 18

REGULATING THE NEEDLE TENSION

A correct stitch can usually be obtained by varying the tension on the needle thread.

To increase the tension, turn the thumb nut clockwise: **to lessen the tension,** turn the nut to the opposite direction. The thumb nut should not be turned abruptly, but regulated little by little, until the desired tension is obtained. All adjustments must be made while the **presser foot is down** since an automatic release does not permit adjustments to be made while the presser foot is up.

Ordinarily, a perfect stitch can be obtained by varying the tension on the **needle** thread only. However, it is sometimes necessary to adjust the bobbin thread. For information as to increasing or decreasing the bobbin thread tension, see Page 10, Fig. 10.

The MORSE FOTOMATIC **III** is correctly adjusted before leaving the factory and checked and readjusted before the dealer delivers it to you.

A careful regulation of the tensions on the MORSE FOTOMATIC **III** will assure you of the finest seams that mechanical design will produce.

PRINCIPLES OF THE FOTOMATIC III SYSTEM

The MORSE FOTOMATIC® III zigzag control system is the most advanced and yet the simplest ever devised for home sewing. The controls are designed so that you always have a picture of the stitch the machine will make ..... before you begin to sew.

The FOTOMATIC® SELECTOR LEVER (Fig. 19) makes automatic buttonholes, automatic blind stitches, and a wide variety of design patterns possible without the need for, or cost of, expensive cams.

The FOTOMATIC® GUIDE WINDOW indicates the operation dialed by the selector lever. The pictures in the guide window move clockwise, in a circle, as you press down on the **SELECTOR LEVER.** The "M" is for manual or normal sewing and gives you full control of the machine. The other positions, for automatic buttonholes and automatic blind hem, are explained in the text following.

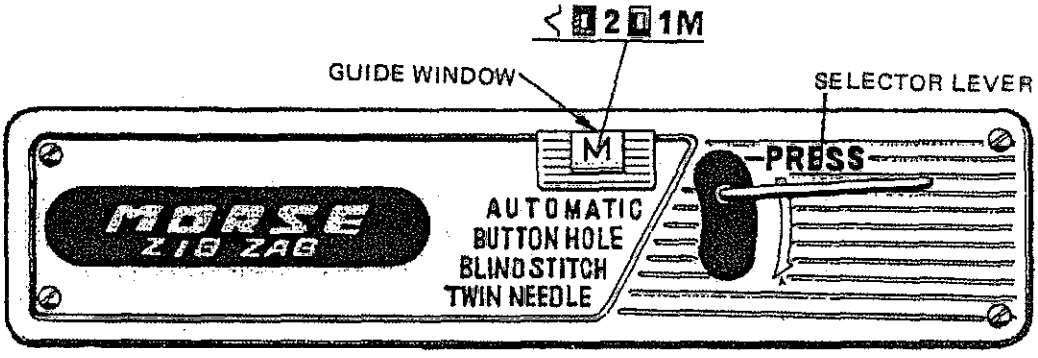


Fig. 19

REGULATING THE WIDTH OF STITCH:

The position of the zigzag lever (Fig. 20, A) determines whether the machine will make a straight or zigzag stitch. A picture of the stitch is etched on the panel (D) below the lever. You will note that the lever is on a spring and returns automatically to the "O" or straight stitch position. As you move the lever to the right, the machine makes a zigzag stitch as wide as the picture below it.

TO LOCK ZIGZAG STITCH:

The lock (B) controls the minimum width. Depress lock and move it and zigzag lever until the right edge is opposite the picture of the desired width. When lock is released, it will hold lever in position.

Lock (C) controls the maximum width. Depress lock and move to left until maximum width is reached. The zigzag lever cannot now be moved beyond this point.

These locks are used primarily for design patterns. For most operations, they should be returned to the far right and for left, as shown in Fig. 20.

Note: The purpose of the etchings DOUBLE NEEDLE ZONE, BUTTONHOLE ZONE. and BLIND STITCH are explained under their operation.
For straight or regular zigzag stitching, make certain that the letter "M" appears in the FOTOMATIC GUIDE WINDOW.

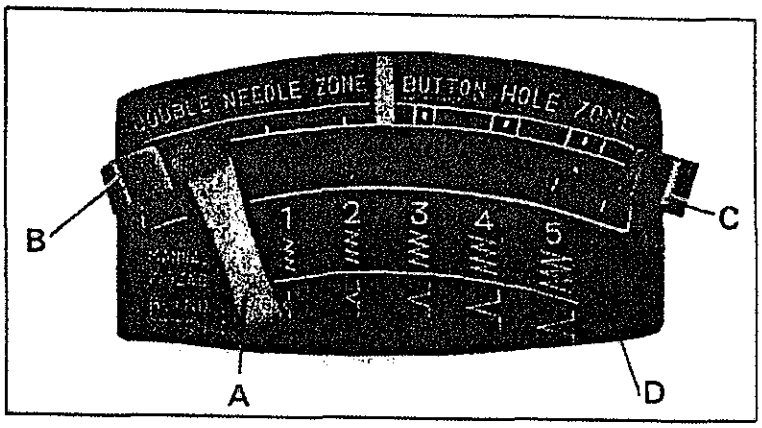


Fig. 20

AUTOMATIC BUTTONHOLES

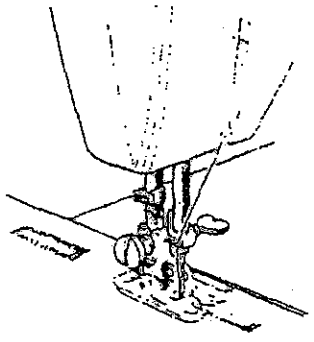


Fig. 21

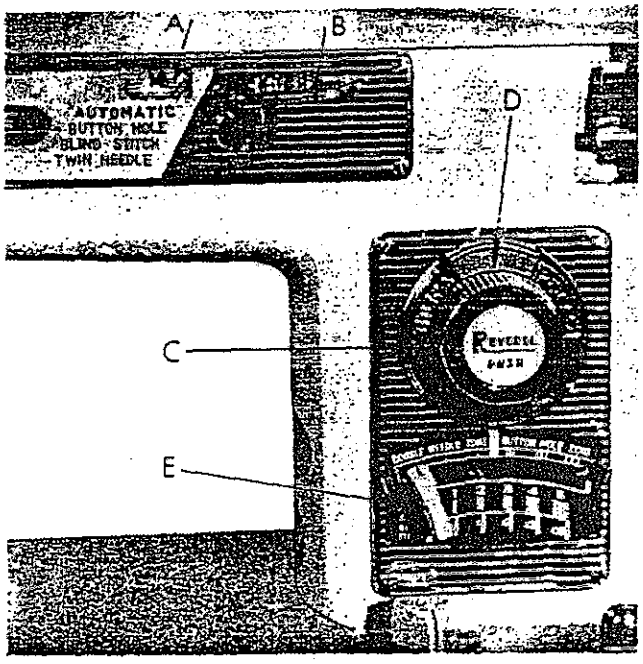


Fig. 22

NOTE: **For best results, use bottonhole foot and make smaple on switch of material to be sewn. With some materials, tighten upper tension slightly.**

1. Using pencil or tailor's chalk, mark length of buttonholes by adding 1/4" to size of button.
2. Press FOTOMATIC® SELECTOR LEVER (B) until "1" appears in Guide Window (A).
3. Turn stitch length dial (C) until picture appears in window (D).
   (The perfect setting will vary slightly with material being sewn)
4. Set and lock zigzag lever (E) in BUTTONHOLE ZONE. At position 3, you will have buttonhole with narrow sides. The sides widen, as indicated, as lever is moved toward position 5..
5. Place material under presser foot so that the lower bar of buttonhole is directly under the needle (Fig. 23, step 1).
6. Start machine slowly. After several stitches, the bar will be completed, there will ba a clicking noise and the machine will automatically begin making the left bead (Fig. 23, step 1)

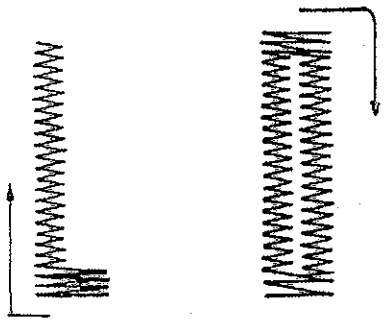


Fig. 23

7. Continue stitching until the top of the desired buttonhole is reached. Stop. The symbol ▯ will have appeared in the Guide Window automatically.
8. Press the FOTOMATIC® SELECTOR LEVER once and "2" will appear in the Guide Window. Start machine. The top bar will be made, the machine will click and automatically make the right bead. When the lower bead is reached, stop the machine by grasping balance wheel with right hand.
9. Remove the completed buttonhole from the machine and cut thread with seam ripper provided.

Note: **The FOTOMATIC® GUIDE WINDOW now shows the symbol ▯ Push FOTOMATIC® LEVER twice until "M" appears for manual sewing ..... or three times until "1" appears to begin new buttonhole.**

AUTOMATIC BLINDSTITCHING

By folding the material and adjusting your machine as outlined below, you can sew hems which are practically invisible. No other attachments or accessories are required.

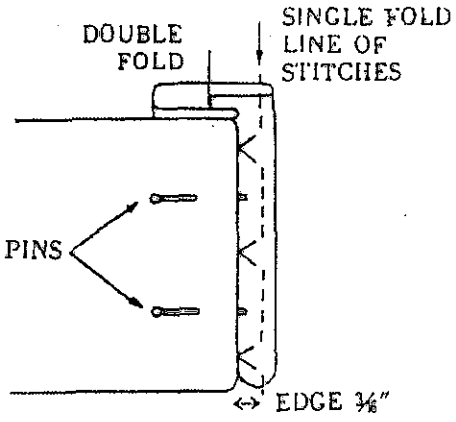


Fig. 24

1. Prepare and baste hem and, if desired, attach seam binding the same was as for hand hemming and turn garment inside out.
2. Fold over hem again so that the RIGHT sides of the material are facing each other. Allow edge of hem or seam binding to extend about 3/16" beyond edge of folded back portion. Hold in place with pins inserted across folds (see Fig. 24).
3. Press FOTOMATIC® SELECTOR LEVER until blindstitch symbol < appears in FOTOMATIC® GUIDE WINDOW (Fig. 22. A).
4. Adjust stitch length to from 8 to 15 stitches per inch. Set for fewer stitches if material is very sheer.
5. Set ZIGZAG WIDTH LEVER (Fig. 20, E) opposite blind stitch etching desired. Use smaller blind stitch for lighter materials, wider stitch for heavy materials.
6. Place material under presser foot so that straight stitching is in the single fold (Fig. 24). Every sixth stitch, the machine will automatically make one zigzag stitch to the left. This stitch should barely catch the double fold so as to make blind hem onopposite, orRIGHT, side as invisible as possible.

EMBROIDERY

Be sure you have studied the previous pages in this instruction manual before going ahead with instruction on this page.

To make this satin stitch:

1. Set stitch regulator (see Page 14) in area, as close to the left end as material makes possible. In other words, the stitch shall be as close together as possible, the material feeding slowly.
2. Set fabric selector knob to "NORM" (see Page 30).
3. Set zig-zag width lever for desired zig-zag width (see Page 16).
4. Start sewing. This produces a satin stitch which is the basis for all straight running embroidery designs.

To make the decorative design:

1. Set machine for satin stitch.
2. Move zig-zag width lever slowly from 0 to 5 and then slowly return it again from 5 to 0. Do this rhythmically as the machine sews and repeats over and over. You will obtain this lovely scallop type design.

To make this dart type design, follow these instructions:

1. Set machine for satin stitch.
2. Moving zig-zag width lever slowly to the right from 0 to 5 and then return to 0 position **quickly.** Repeat continuously in this way as machine is sewing, but be sure that you move zig-zag width lever slowly when widening zig-zag stitch and return it quickly to 0, after position 5 has been reached.

To make this checkerboard pattern, follow these instructions:

1. Set machine for satin stitch.
2. Set the left stop lock to 1 or 1.5 position and the right stop lock to 4 or 5 position.
3. Suddenly move zig-zag width lever to the right quickly, and keep it as it is for a few seconds, and then quickly get out of it.

Note: For Best results use buttonhole Foot.

BUTTON SEWING

1. Set zig-zag width lever between 4 and 5 of zig zag stitch scale (see Page 16).
2. Set the stitch length regulator to 0 position.
3. Attach button sewing foot and put the button between button sewing foot and fabric so that the holes of the button line up horizontally.
4. Rotate the balance wheel by hand slowly toward you, so that the needle goes through one hole of button. Continue to turn balance wheel by hand to make sure the needle enters other hole of button properly and does no hit the button. If needle does not clear buttonhole, then adjust the throw of the needle by readjusting the zig-zag widtb lever until the needle throw is equal to the distance between the holes in the button.
5. Run machine at medium speed, making about 5-6 stitches.

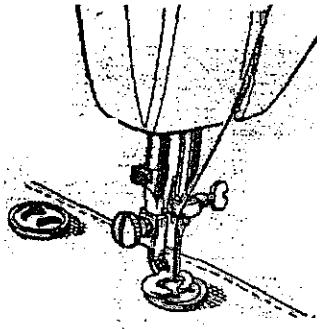


Fig. 25

Four-hole button with parallel stitching

1. Follow the same procedure as for sewing on "2-hole buttons" above.
2. After stitching first 2 holes of button, lift presser foot and move fabric and button a bit, so that the remaining 2 holes are now in position for the needle and repeat.

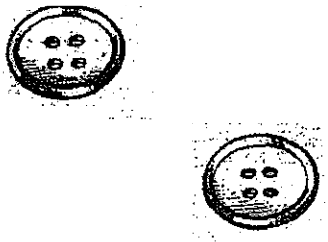


Fig. 26

THE ADJUSTABLE ZIPPER FOOT

Use the adjustable zipper foot, to sew zippers on to a garment. This zipper foot is adjustable. so that it can be moved to the left or the right side. The illustration shows the zipper foot set at the left side of needle, so that the needle will enter the garment close to the edge of the material, but with no danger of fracturing the links of the zipper. Always be sure that your machine is set for straight stitch sewing.

To adjust the foot to stitch on the other side, loosen screw at back of foot and slide foot over to the right for stitching close to the zipper links on the right half of the fastener.

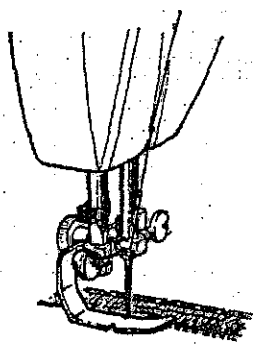


Fig. 27

DOUBLE NEEDLE SEWING

1. Replace single needle with double needle.
2. Use two spools of thread on the two spool pins on top of the machine.
3. Press FOTOMATIC SELECTOR lever until the letter "M" appears in FOTOMATIC guide window.
4. Follow same principle of threading as for a single needle (see Page 11), using the second hole and disc on the machine, and avoid crossing two threads. Start double needle sewing.

Note: **In sewing zigzag stitches with double needle, do not move zigzag width lever beyond DOUBLE NEEDLE ZONE. Use Lock (C) (Fig. 20) to limit width so that double needle will not break.**

OVERCASTING A RAW EDGE

1. Set machine to produce a satin stitch.
2. Regulate width of zig-zag stitch by moving zig-zag width lever to the width desired and lock zig-zag into position (see Page 17).
3. Place raw edge of fabric under presser foot and start to sew.
4. Be sure that needle "bites" close to the raw edge of the fabric, alternately into the open space and into the fabric itself.
   A clean satin stitch edge will result by using the above instructions. You may however, wish to overcast with the stitches spaced farther apart. In this case set stitch lenght at 15 stitches per inch (see Page 14).

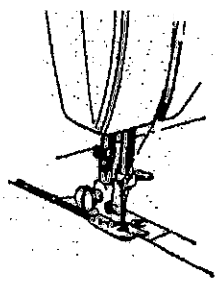


Fig. 28

APPLIQUE WORK-LACE EDGING

1. Regulate length of stitch and width of zig-zag as you wish.
2. Place lace edging on edge of fabric which is to be stitched, lower presser foot and start sewing. Be sure that the zig-zag stitch sews into both fabric and lace.
3. If there is a raw edge of fabric underneath, cut it even and you will have a finished edge.

NARROW ROLLED EDGES

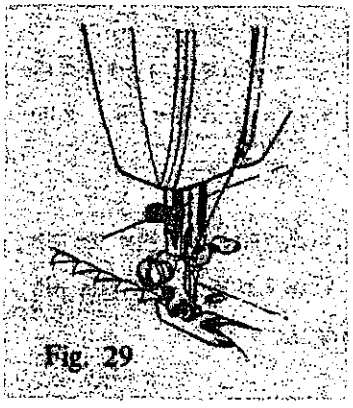


Fig. 29

Follow the same procedure as for narrow straight stitch hem (as illustrated under), but set zig-zag width lever between 1 and 2 to produce a zig-zag stitch (see Page 17).

CUT-WORK APPLIQUE

1. Baste the piece of material with the design on to the article to which it is to be sewn.
2. Place both under the presser foot and sew a fine satin stitch over the lines of the design.
3. When you are finished with the embroidery work, trim all surplus away with a pair of scissors, cutting closely as possible to the design. Now the design is a part of the article to which it is sewn.

NARROW STRAIGHT STITCH HEM

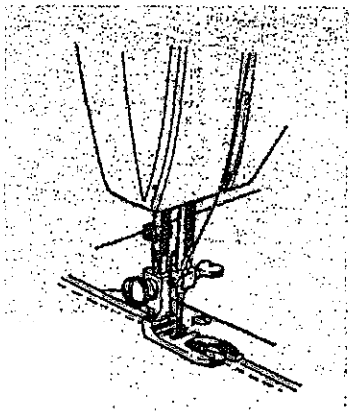


Fig. 30

1. Remove regular hinged foot and attach ⅛" hemmer to the presser foot bar.
2. Regulate length of stitch to a medium size stitch (see Page 14).
3. Be sure zig-zag width lever is set to zero for straight stitch (see Page 17).
4. Fold over edge of fabric about one-eighth of an inch, for a length of about two inches, and insert this fold beneath hemmer into scroll (Fig. 30). The tongue of the hemmer turns in the edge of the fabric and forms the hem.
5. Move fabric back and forward with care until hem forms itself in scroll.
6. Pull fabric toward you until the end of the fabric is just below the needle.
7. Lower hemmer by lowering presser foot lever and start sewing. Guide and feed only enough material into hemmer foot to fill out scroll.

EMBROIDERY AND MONOGRAMMING WITH FABRIC SELECTOR

1. Use darning and embroidery foot.
2. Regulate width of zig-zag stitch by moving zig-zag width lever to position 2 or 3 (see Page 17).
3. Put fabric with design to be embroidered into an embroidery hoop.
4. Place fabric and hoop under needle, bring emboidery foot down and start to sew as follows.
5. Hold hoop and needle thread with left hand, turn balance wheel slowly toward you with right hand and bring lower thread up through the fabric.
6. Holding both thread and hoop with the left hand, run the machine at a high speed. Guide the hoop slowly in time with the movement of the needle and the fabric will be embroidered. After a little practice you will become adept in following the design which you wish to embroider.

Note: **Silk or mercerized thread is generally used for this type of work. Always be sure that the monogram or embroidery design is carefully drawn on the fabric. If the stitches are too far apart move the hoop more slowly. If the stitches pile up unevenly, move the hoop more quickly.**

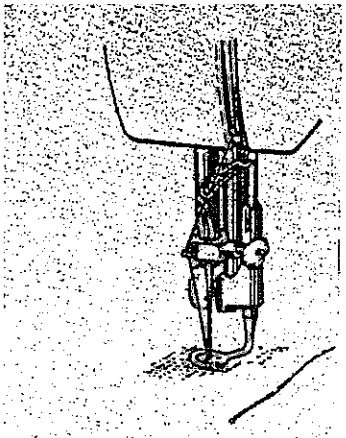


Fig. 31

MULTIPLE SLOTTED BINDER

The multiple slotted binder is designed for producing various width of bound edges and the wide range of obtainable results are unbelievable. There are 5 slots, each of a different size, designed to carry simple fold bindings in 5 different widths, from size 1 through 5. You will find size 5 binding standard at Notion and Sewing Stores and this size is generally the most useful for your everyday sewing. The single fold commercial binding is to be used in the slots of the binder. Insert the binding so that both raw edges face left.

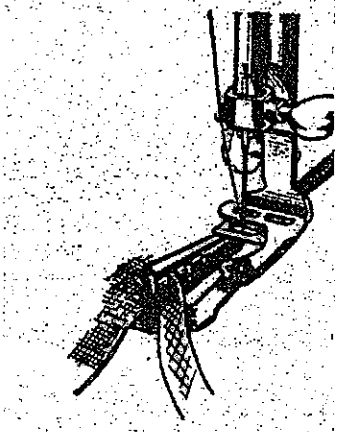


Fig. 32

To prepare the machine follow these steps:

1. Remove regular foot and attach binder to presser foot bar.
2. If you desire straight stitch binding, set zig-zag width lever to zero for straight stitch sewing. If you wish to bind with a zig-zag stitch, set the sig-zag width lever to zig-zag stitch of 2 or 3 (see Page 17).
3. Set length of stitch as desired (see Page 14).
4. Select width of binding you are going to use and cut the end to a Diagonal point so that it can be drawn through the slot in binder designed.
5. Now stitch 2 or 3 inches to determine the setting of binder at the edge of binding.
6. Once binder has been adjusted correctly to stitch where desired, enter the material to be bound between the halves of binder scroll. Be sure that the material being bound is firmly into the binder and close to the needle. For curved edges or tiny scallops this is particularly important. Try using the third finger of the left hand for this work and you will see how easy it is to bind a curve while this finger remains on the binder FINGER REST underneath point X shown on illustration above.

THE RUFFLER

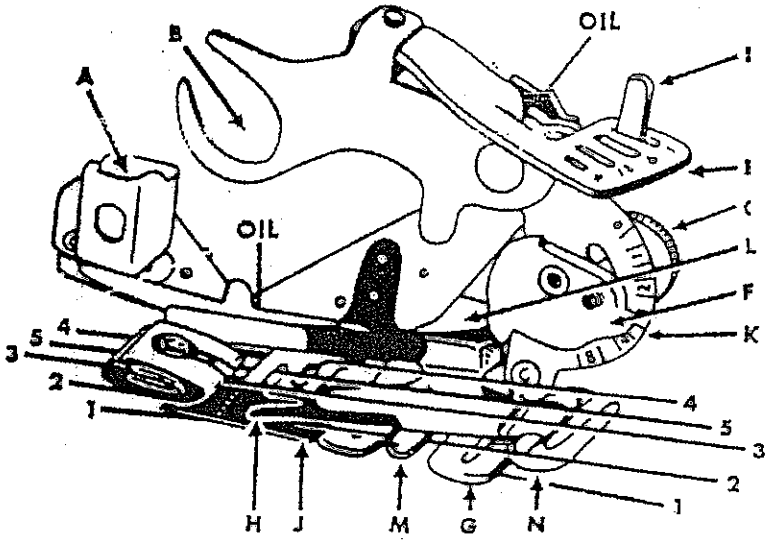


Fig. 33

A–FOOT which is attached to Presser Bar.
B–FORK ARM must be placed astride the needle clamp.
C–ADJUSTING SCREW. Holds fullness of gathers or pleat.
D–PROJECTION. Fits through slots in Adjusting Lever.
E–ADJUSTING LEVER. Used to set the Ruffler for gathers or pleat.
F–POINTER. Determines size of plait of fullness of gathers.
G–SEAM GUIDES. On Ruffler separator.
H–RUFFLING BLADE. The upper blue steel blade with teeth at end.
J–SEPARATOR. The lower blue steel blade which prevents feed blade contacting feed at machine.
K–DIAL has numbers from 1 to 8 which aid in setting fullness of ruffle.
L–HEADING GUIDE can be adjusted for different size headings.
M–LIP which separates seam guides.
N–SLIDING GUIDE can be adjusted for different width seams or headings.
Line 1–Is under the Ruffler and indicates the position for the garment to which ruffle is to be stitched giving 1/4 inch seam.
Line 2–Between the blue blades where the feed blade with gather or pleat material with a 1/4 inch seam.
Line 3–The upper piece of material used when ruffle is enclosed between two pieces of material.
Line 4–Guide for piping strip.
Line 5–For edgestitching material to ruffle that is entered from right.

GATHERING A RUFFLE

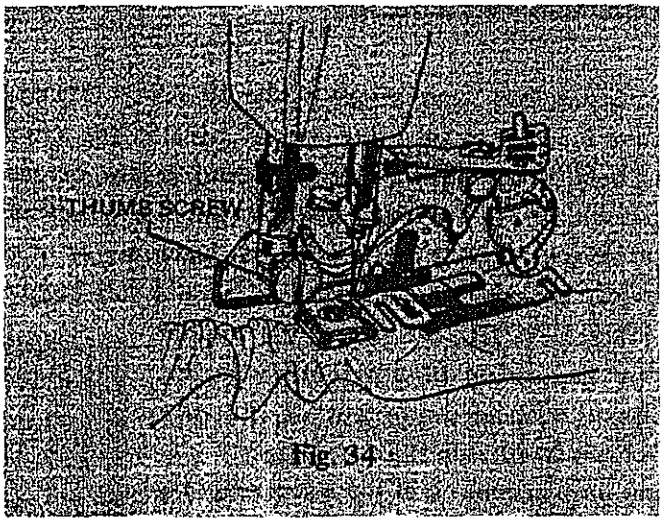


Fig. 34

The Ruffler will make ruffling and pleating in uniform fullness, or with simple adjustments, can be made to vary fullness of ruffle and accomplish grouping of pleats or gathers without removing Ruffler from machine.

Remove presser foot and thumb screw from machine. Attach Ruffler Foot "A" in its place with Fork Arm "B" astride the needle clamp. When Ruffler is in position tighten thumb screw firmly. Turn balance wheel slowly to see if needle passes through the center of the hole in foot of Ruffler. Finger "D" should be in slot 1 for gathering.

Place material to be gathered between the blue blades of the Ruffler following line 2; push forward until material is under needle, lower presser bar and be ready to stitch.

To make a scant gather loosen Adjusting Screw "C" and set Pointer "F" at figure 1 or 2 on Dial "K". Tighten the Adjusting Screw "C" securely and test fullness of gathers.

By setting Pointer "F" at different numbers, and changing the length of machine stitch, a variation from a scant to a full ruffle will result.

RUFFLING

The widest plait is obtained when Pointer "F" on Dial "K" is on number 8.

Spaces between plaits can be changed as follows.

Finger "D" in slot 1 produces a plait every stitch.

Finger "D" in slot 6 produces a plait every sixth stitch.

Finger "D" in slot 12 produces a plait every twelfth stitch.

Finger "D" in slot with the star puts ruffler out of action and machine sews straight (this is used for spaced plaits).

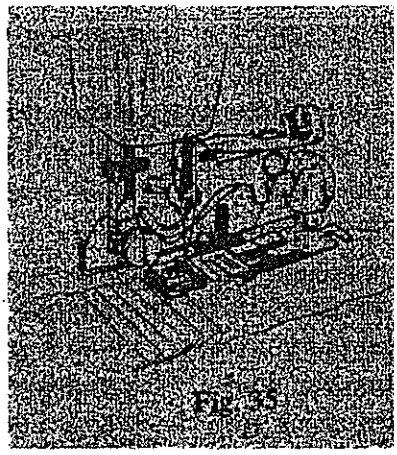


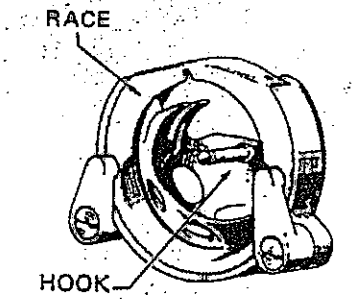
Fig. 35

NON-JAMMING FEATURE

One of the outstanding innovations of the MORSE FOTOMATIC is the fact that our engineers have for all practical purposes eliminated the age-old problem of jamming. Other round bobbin, oscillating machines tend to jam, or freeze, when thread is improperly introduced into the race assembly. This introduction of alien thread is usually the result of sewing without material in the machine, or of turning the balance wheel backwards while the machine is threaded. Should this happen while you are using the MORSE FOTOMATIC III, the thread will simply break and, by the action of a scientifically cut hook, the thread will be swept out of the race and the machine freed almost immediately.

The machine may become stiff for a moment. Do not be afraid to turn the machine by turning the balance wheel.

Your dealer will be happy to show you the operation of the precision engineered race assembly and to explain the action of the cut hook in preventing jamming.



HOOK AND RACE ASSEMBLY

Fig. 36

AUTOMATIC DARNER

The MORSE FOTOMATIC III is the zig-zag sewing machine with a built-in, automatic darner. This darner allows you to adjust the pressure on the presser foot from strong to very light and serves, with the fabric selector, as an aid to perfect darning, embroidery, applique or other work requiring that you be able to control the direction of the stitch independently of the feed action.

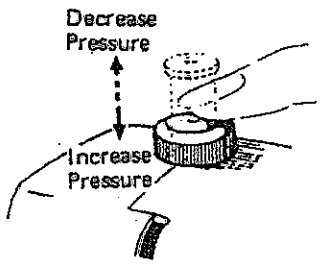
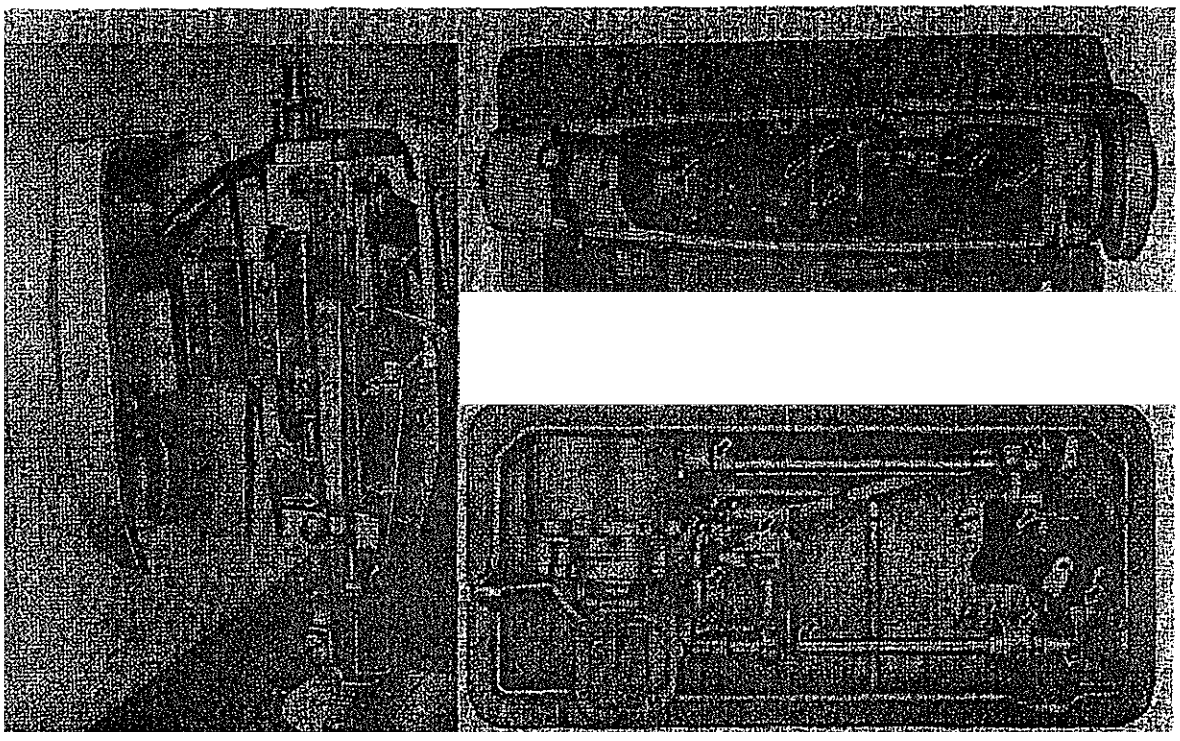


Fig. 37

For ordinary family sewing, it is seldom necessary to change the pressure on the material. In sewing fine silk or flimsy material, lighten the pressure by pressing release finger, on the top of the machine. To increase the pressure, press cap down. The pressure should be only heavy enough to prevent the material from rising with the needle and to enable the feed to move the work along evenly.

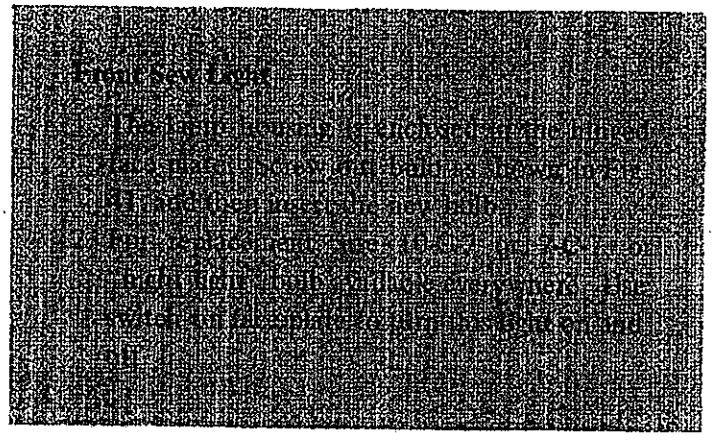
TO OIL THE MACHINE



A sewing machine never needs grease. All moving parts which come in contact with others. must be covered with a film of oil, and should not be allowed to beome dry. Oil, when necessary, should be applied at the points indicated by arrows in (Fig. 38 and 39,) a drop of oil being sufficient at any one place. Oil should be applied freely at all contact points on the underside of the machine (Fig. 40). When oiling, insert the oil nozzle well into the oil holes. After oiling, run the machine rapidly for a few minutes, so that the oil may penetrate into the bearings: For the proper care of your machine oil frequently. Neglecting to do this tends to shorten the life of the machine, and may cause trouble and annoyance. Take off top cover by removing two screws as shown and oil all moving inside parts.

NOTE: USE SEWING MACHINE OIL ONLY.

THE BUILT-IN LIGHT



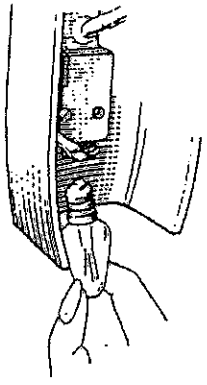
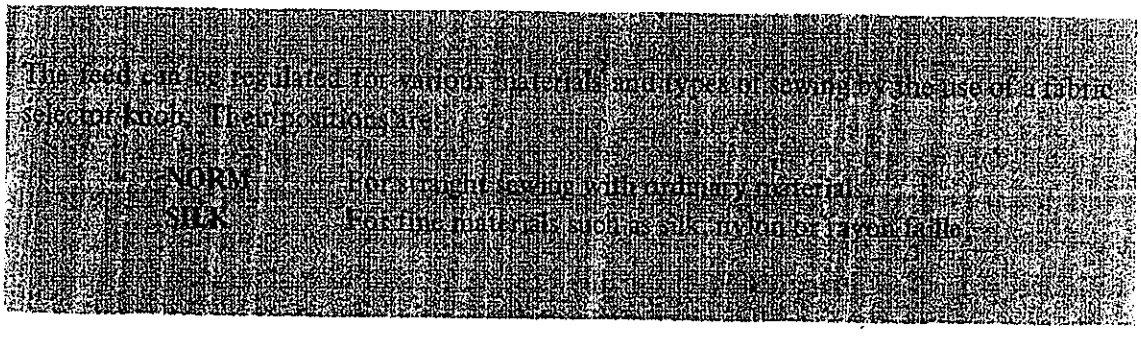


Fig. 41

FABRIC SELECTOR



OPERATING HINTS

SEE THAT THE PRESSER FOOT is securely clamped by the screw and snug against the presser bar so that the needle may pass through the opening in the foot without any interference.

SKIPPED STITCHES. May be caused by a bent or blunt needle; by incorrect setting of the needle; the wrong size needle; by a thread too heavy for the size of the needle.

BREAKING NEEDLES are usually due to pulling on the work, cuasing the needle to get out of line and strike the needle plate thus breaking or bending the needle. It may be due to presser foot or attachments not being securely fastened to presser bar. Be sure to use correct size needle and thread for material. See needle chart (Page 7).

BREAKING THE UPPER THREAD. May be caused by.

(1) Incorrect threading.
(2) Not bringing up under thread correctly
(3) Upper tension too tight.
(4) Needle imperfect, or set incorrectly.
(5) Needle rubbing against attachments or presser foot.
(6) Needle eye too small for thread.
(7) Starting the machine at full speed
(8) Starting without take-up lever at highest point.

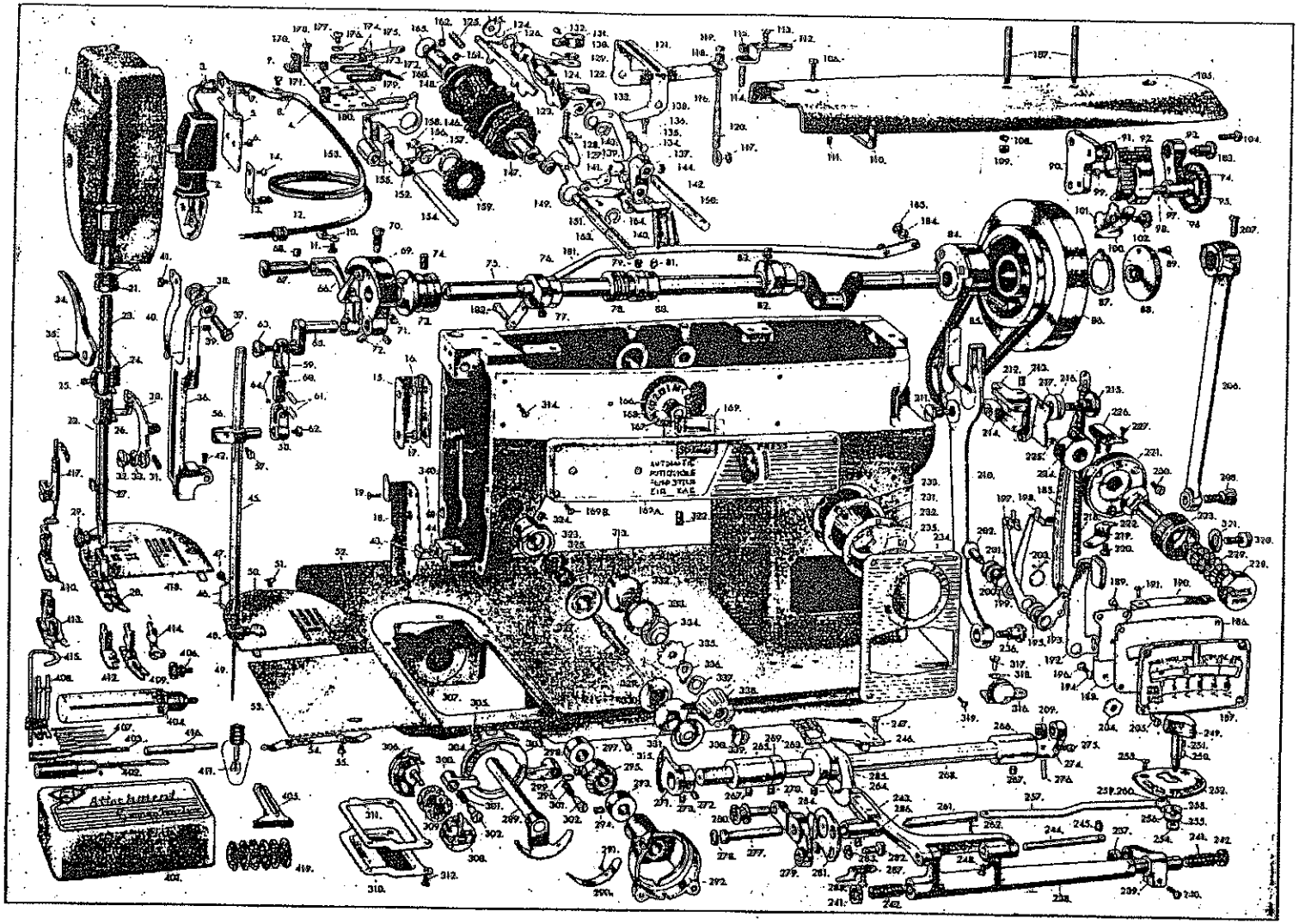
BREAKING THE LOWER THREAD. May be caused by:

(1) Incorrect threading of bobbin case.
(2) Too tight a tension.
(3) Bobbin wound too full to revolve freely.
(4) Not bringing up under thread correctly.
(5) Hole in the needle plate rough, caused by needle striking the plate.

UNEVEN STITCHES. May be caused by:

(1) Presser foot not resting evenly on material.
(2) Feed not high enough.
(3) Too short a stitch.
(4) Pulling the cloth.
(5) Too fine a needle with too coarse or poor a thread.

MODEL FOTOMATIC III



IDEN. NO.	PARTS NO.	PARTS NAME
1.	ZAH-102-PM	FACE PLATE ONLY
2.	AHHCZ501	LIGHT ASSEMBLY
3.	HH9538	CORD BUSHING
4.	HHCH9118	TUBE FOR CORD
5.	ZA3-1241	LIGHT HOLDER
6.	0HA02	SET SCREWS (2) FOR HHCH5168 (2.)
7.	HA08-1	SET SCREWS (2) FOR ZA3-174A (3.)
8.	ZP9523	CORD CLAMP
9.	09AH	SET SCREW FOR ZP9523 (8.)
10.	HHK231A	CORD CLAMP
11.	08A11	SET SCREW FOR HHK23A (10.)
12.	HHCH924	CORD BUSHING
13.	ZL1953	SPRING FOR FACE PLATE
14.	09AH	SET SCREWS (2) FOR ZL1738 (13.)
15.	AZA2-179	FACE PLATE HINGE
16.	08D05-2	SET SCREWS (2) FOR AZA2-178 (15.) ARM SIDE
17.	09A11	SET SCREWS (2) FOR AZA2-180 (15.) FACE PLATE SIDE
18.	AZ3H 105	THREAD GUIDE FOR ARM FRONT END
19.	09005-2	SET SCREW FOR AZ3H-108 (20.)
20.	AHTH1A	BARRIER
21.	ZAH-160	COLLER FOR BARKES
22.	HC140	PRESSER BAR ONLY
23.	ZAH-140A	PRESSER BAR
24.	ZAH-140A	PRESSER BAR BRACKET
25.	15D01	SET SCREW FOR ZAH-140A (24.)
26.	ZAH-1494A	PRESSER BAR BRACKET
27.	HA429	THREAD CUTTER
28.	AZA1-156	HINGED FOOT
29.	09C01A	THUMB SCREW FOR HINGED FOOT
30.	ZAH-147	TENSION RELEASE LEVER
31.	HC148	TENSION RELEASE SPRING
32.	12C05	HINGE SCREW FOR HC148 (31.)
33.	HC149	ADJUSTING WASHER FOR HC443 101.)
34.	HC1-145	PRESSER BAR LIFTER
35.	12C06	HINGE SCREW FOR HC1-145 (34.)
36.	ZAH-150A	NEEDLE BAR SUPPORT
37.	ZG7G	HINGED SIDE FOR ZAH-150A (36.)
38.	ZL6H1	ADJUSTING WASHERS (2) FOR ZG7G7 (37.)
39.	15D05	SET SCREW FOR ZG7G7 (37.)
40.	ZAH-155	SPRING FOR ZAH-150A (36.)
41.	10A76	SET SCREW FOR ZAH-155 (40.)
42.	09A11	SET SCREW FOR ZAH-826A (135.)
43.	10A55	STOPPER FOR ZAH-150A (36.)
44.	09H02	LOCKING NUT FOR 09A55 (43.)
45.	ZAH-125A	NEEDLE BAR ONLY
46.	ZAH-126B	THREAD GUIDE FOR NEEDLE BAR
47.	06A01	SET SCREW FOR ZAH-125B (46.)
48.	AZAH-127A	NEEDLE CLIP
49.	HA9012	NEEDLE 316
50.	AZ3HA-125I	NEEDLE PLATE
51.	11A07	LOCATION SCREW FOR NEEDLE PLATE
52.	11A45	SET SCREW FOR NEEDLE PLATE
53.	Z3HA-139	SLIDE PLATE ONLY
54.	ZAH-135	SPRING FOR SLIDE PLATE
55.	06A02	SET SCREWS (2) FOR ZA3-138 (54.)
56.	ZAH-124A	NEEDLE BAR BRACKET
57.	11A48A	SET SCREW FOR ZAH-124A (56.)
58.	ZAH-125A	LOWER CRANK ROD
59.	ZAH-125A	UPPER CRANK ROD
60.	ZAH-125A	INTERMEDIATE CRANK ROD
61.	ZAH-125A	JOINT PINS (2)
62.	11A44	SET SCREW FOR ZAH-125A (58.)
63.	09G03A	PIN FOR ZAH-125A(60.)
64.	04B01	SET SCREWS (2) FOR JOINT PIN
65.	ZAH-216A	NEEDLE BAR CRANK
66.	ZAHCH2HD	TAKE UP LEVER COMP.
67.	HC217A	HINGED STUD FOR ZAHCH2HD (66.)
68.	15D05	SET SCREW FOR HC217A (67.)
69.	ZAH-209	NEEDLE BAR CRANK ARM
70.	15A01A	SET SCREW FOR ZAH-209 (69.) LARGE
71.	15D14	SET SCREW FOR ZAH-208 169.) SMALL
72.	15D21	SET SCREWS (2) FOR ZAH-216A 167.)
73.	HC202B	TOP SHAFT FRONT BUSHING
74.	15G11	SET SCREW FOR HC202B (73.)
75.	ZAH-201	TOP SHAFT ONLY
76.	ZAH-402	RATCHET DRIVE CAM
77.	04B03	SET SCREW FOR ZAH 402 (76.)
78.	ZAH-401	ZIGZAG DRIVE GEAR
79.	15D01	SET SCREW FOR ZAH-401 (78.)
80.	ZAH-222	COLLER FOR ZAH-401 (78.)
81.	12B05	SET SCREWS (2) FOR ZAH-222 (80.)
82.	HA404A	FEED CAM
83.	15L03	SET SCREW FOR FEED CAM
84.	AZA2-205	TOP SHAFT REAR BUSHING
85.	HA209	TAPERED PIN
86.	ZAH-224A-PM	HAND WHEEL
87.	HA328A	STOP MOTION WASHER
88.	36G01H	STOP MOTION
89.	09A04	STOP MOTION SCREW
90.	ZAH-501 PM	BOBBIN WINDER BRACKET
91.	HA5A4A	SPRING FOR ZAH 501 (92.)
92.	ZAH2-504	PUSHING LEVER
93.	HA503 PM	BOBBIN WINDER FRAME
94.	HA5A5	SPRING FOR HA503-PM (93.)
95.	2L403	RUBBER RING
96.	HA5A8	RUBBER RING WHEEL
97.	HA507	PIN FOR ZAH-506 (98.)
98.	ZAH-506	RUBBER RING WHEEL SHAFT
99.	09C19	GUIDE SCREW FOR ZAH2-504 (92.)
100.	ZAH-510	BOBBIN WINDER LIMITER
101.	HA5A1	SPRING FOR ZAH 510 (100.)
102.	12C24	HINGE SCREW FOR HA503-PM (93.)
103.	12A02	HINGED STUD FOR HA503-PM (93.)
104.	15A02	SET SCREWS (2) FOR ZAH-502 PM (90.)
105.	ZAH2 HD PM	ARM COVER PLATE
106.	12A13	SET SCREWS (2) FOR ARM COVER PLATE
107.	AZAH-A 004	SPOOL PINS (2)
108.	ZAH-A-007	SPRING WASHER FOR SPOOL PIN
109.	11A03	NUT FOR SPOOL PIN
110.	ZAH-018	THREAD GUIDE WITH TWO HOLES
111.	04B09	SET SCREW FOR ZAH-018 (110.)
112.	ZAH-701	STOPPER FOR ZIGZAG STITCH REGULATOR
113.	08A03-1	SET SCREW FOR STOPPER
114.	09A27	STOPPER SCREW
115.	09H01	NUT FOR 09A27 (114.)
116.	ZAH-4E1	AUTOMATIC FEED ROD
117.	ZAH-4E2	SNAP RING FOR ZAH-4E1 (116.)
118.	06A104	ADJUSTING NUT
119.	06A103	LOCK NUT
120.	ZAH-4E2A	SPRING FOR ZAH-4E1 (116.)
121.	ZAH-4E0	AUTOMATIC FEED CAM SELECTOR
122.	ZAH-4R0A	ZIGZAG WIDTH CONTACT FINGER BODY
123.	ZAH-4R1A	ZIGZAG WIDTH CONTACT FINGER
124.	ZAH-4R2	SNAP RINGS (2) FOR ZAH-4R0A (122.)
125.	ZAH-4R3	SPRING FOR ZAH-4R1A (123.)
126.	HC426	COTTER PIN FOR ZAH-4R1A (123.)
127.	ZAH 4R5A	BUTTON HOLE & BLIND STITCH CAM SELECTOR
128.	ZAH4A7	ADJUSTING WASHER FOR ZAH-4R5A (127.)
129.	ZAH-4R0A	CONTACT FINGER DRIVING ARM
130.	ZAH-4R7A	CONTACT FINGER BUFFER SPRING
131.	ZAH-4R8A	COLLER FOR ZAH-4R5A (127.)
132.	09A02-1	SET SCREW FOR ZAH-4R8A (131.)
133.	ZAH-4R9	ZIGZAG WIDTH REGULATOR DRIVING ARM
134.	09E01	SET SCREW FOR ZAH-4R9 (133.)
135.	HA509A	WASHER FOR 09E01 (134.)
136.	ZA5RA	SPRING WASHER FOR 09E01 (133.)
137.	ZAH-4T4	ZIGZAG WIDTH REGULATOR ARM
138.	12A09	SET SCREW FOR ZAH-4T4 (137.)
139.	ZAH-4T7	SPRING FOR ZAH-4T4 (137.)
140.	ZAH-4T2	ZIGZAG WIDTH REGULATOR BODY
141.	ZAH-4T4	SNAP RING FOR ZAH-4T3 (140.)
142.	ZAH-4T7	ZIGZAG WIDTH REGULATION SHAFT
143.	ZAH-4T7	SNAP RING FOR ZAH 4T7 (142.)
144.	15A03	SET SCREW FOR ZAH 4T7 (142.)
145.	ZAH-4P7	COVER PLUG FOR ZAH-4P3 (142.)
146.	AZAH-400B	WORM GEAR COMPLETE
147.	AZAH-4P3	BUTTON HOLE CAM COMPLETE
148.	ZAH-4P4D	ADJUSTING WASHER FOR ZAH-4P9 (150.)
149.	AZAH-4P2	CHANGE RATCHET ARM
150.	AZAH-4P9	CHANGE LEVER FOR BUTTON HOLE & BLIND STITCH
151.	09A08-1	SET SCREWS (2) FOR AZAH2-419 (150.)
152.	AZAH-4P6	BUTTON HOLE & BLIND STITCH CAM SELECTOR
153.	ZAH-4P1	COLLER FOR AZAH-4P0 (152.)
154.	ZAH-4P2	SHAFT FOR ZAH-4P4 (153.)
155.	09B01	SET SCREW FOR ZAH-4P2 (154.)
156.	ZAH-4P3	RATCHET FOR AZAH-4P0 (152.)
157.	ZAH-4P4	PIN FOR ZAH-4P3 (156.)
158.	ZAH-4P5	SPRING FOR ZAH-4P3 (156.)
159.	ZAH-4P5	BUTTON HOLE RATCHET WHEEL
160.	ZAH 408	BUSHING FOR CAMS
161.	12B06	SET SCREWS (2) FOR ZAH-405 (183.)
162.	15B03	SET SCREW FOR ZAH-402 (164.)
163.	ZAH-402	CAM SHAFT
164.	ZAH-414	SNAP RING FOR CAM SHAFT
165.	ZAH-4P6	COVER PLUG FOR ZAH 408 (183.)
166.	ZAH-448	BUTTON HOLE STITCH INDICATOR
167.	ZAH-449	NUT FOR INDICATOR
168.	ZAH-450	RING FOR INDICATOR
169.	ZAH2-455	INDICATOR WINDOW
169A.	ZAH2-455I	INDICATOR EMBLEM
169B.	09A12	SET SCREWS (4) FOR ZAH2-455I 169A.)
170.	ZAH-450	SPRING RETAINER
171.	ZAH-4S3A	CHANGE RATCHET WHEEL SPRING
172.	ZAH-4S2	SELECT RATCHET WHEEL SPRING
173.	HA5D4	WASHERS (4) FOR SPRING
174.	09A15-1	SET SCREWS (4) FOR SPRING
175.	ZAH-4S3A	LIMITER FOR PUSH BUTTON
176.	HA5D9A	WASHERS (2) FOR LIMITER
177.	09A11	SET SCREWS (2) FOR LIMITER
178.	09A03-1	SET SCREWS (2) FOR ZAH-4S6 (176.)
179.	ZAH-4S4	CHANGE RATCHET SPRING
180.	ZAH-4S5	BUTTON HOLE RATCHET SUPPORT SPRING
181.	AZAH-4S6A	ZIGZAG DRIVE ROD COMP.
182.	ZAH-4S6A	ZIGZAG DRIVE ROD PIN
183.	ZAH-4C5	SNAP RING FOR JOINT PIN
184.	HC422	SPRING WASHER FOR JOINT PIN
185.	ZAH-4C6	ZIGZAG REGULATING ROD
186.	ZAH-4T0	ZIGZAG SWITCH REGULATOR PLATE
187.	ZAH2 4S8	INDICATOR PLATE FOR ZAH-4S0 (186.)
188.	ZAH-4S01	SUPPORT FOR AZAH2 4S6 (182.)
189.	15D01-1	SET SCREWS (2) FOR ZAH 4T01 (188.)
190.	ZAH-4S1	LIMITER STOP PLATE
191.	ZAH-4S2	PINS (2 FOR ZAH-4S1 (190.)
192.	AZAH2 4S9	ZIGZAG STITCH REGULATING LEVER
193.	AZAH 4S1	ZIGZAG STITCH REGULATING ARM
194.	HA4D3	ADJUSTING SCREW FOR AZAH 4S1 (193.)
195.	ZAH-4S6	ADJUSTING WASHER FOR HC425 (209.)
196.	HA366 J	WASHER FOR HA09 (194.)
197.	ZAH-4M1	LIMITER ARM LEFT
198.	ZAH 4M2	LIMITER ARM RIGHT
199.	ZAH-4A7	SPRING WASHER FOR LIMITER ARMS
200.	ZL170A	WASHER FOR LIMITER ARM
201.	ZAH-4A1	BUSHINGS (2) FOR HC25 (202.)
202.	12C25	ZIGZAG STITCH REGULATING LEVER SHAFT
203.	ZAH 441	RETURN SPRING FOR LIMITER ARM
204.	HZA01	NUT FOR HC25 (202.)
205.	15D06	SET SCREWS (4) FOR ZAH-4A0 (183.)
206.	AZAH-3B4	CRANK ROD ASSEMBLY
207.	HA01	CRANK ROD CAP SCREWS (2)
208.	15G01	JOINT SCREW FOR CRANK ROD
209.	15H01	NUT FOR 15G01 (203.)
210.	ZAH-402	FEED FORK ONLY
211.	15G19	PIN FOR HA4 4T2 (214.)
212.	AZAH4 403	FEED REGULATOR BODY ASSEMBLY
213.	12A30	SET SCREW FOR AZAH-403(215.)
214.	HA1-451	SLIDING BLOCK FOR FEED REGULATOR
215.	AZAH3-4D3	HINGED STUD FOR AZAH4 403 (212.)
216.	HA407A	ADJUSTING WASHER FOR AZAH1-403 (212.)
217.	ZAH-407	WASHER FOR AZAH-403 (212.)
218.	ZAH-4D3	FEED REGULATOR SPRING
219.	HA484	FEED REGULATOR SPRING RETAINER
220.	HA409	SET SCREW FOR HL484 (219.)
221.	ZAH-426	HOUSING FOR STITCH REGULATOR
222.	ZAH-493A	SPRING WASHER FOR STITCH REGULATOR
223.	ZAH-482A	BUSHING FOR REVERSE PLUNGER
224.	HR437	STITCH REGULATOR CAM
225.	12D03	SET SCREW FOR HR437 (224.)
226.	HR481B	GUIDE FOR REVERSE PLUNGER
227.	09A07	SET SCREWS (2) FOR HR481B (226.)
228.	AZAH2-410	REVERSE PLUNGER
229.	HK413	SPRING FOR REVERSE PLUNGER
230.	08A13 2	SET SCREWS (2) FOR ZAH-409 (231.)
231.	ZAH2 413	STITCH REGULATOR KNOB
232.	ZAH2 415	STITCH REGULATOR INDICATING KNOB
233.	HZA01-1	SET SCREW FOR ZAH2-415 (232.)
234.	ZAH2-414	STITCH REGULATOR EMBLEM
235.	ZAH2-447	STITCH REGULATOR WINDOW
236.	15C02	JOINT SCREW FOR FEED FORK
237.	15H01	NUT FOR JOINT SCREW
238.	ZAH-470	FEED ROCK SHAFT
239.	ZAH-431	FEED ROCK ARM
240.	11A02	SET SCREW FOR ZAH-431 (239.)
241.	ZA60DA	SCREW CENTERS (2)
242.	ZH1002	NUTS (2) FOR SCREW CENTER
243.	ZAH-435	FEED ARM
244.	ZAH-4A3	FEED ARM SHAFT
245.	ZAH-4E5	SNAP RING FOR FEED ARM SHAFT
246.	ZAH 450	FEED DOG
247.	04A01	SET SCREWS (2) FOR FEED DOG
248.	11A30	SET SCREW FOR ZAH 4A2 (244.)
249.	AZAH2-427	FEED LIFTING REGULATOR KNOB
250.	HC402	STOP PIN FOR AZAH2 427 (249.)
251.	HC403B	SPRING FOR HC402 (250.)
252.	ZAH2-490	INDICATING PLATE FOR AZAH2-427 (249.)
253.	04D03	SET SCREWS (2) FOR ZAH2-490 (252.)
254.	HH401	NUT FOR KNOB SHAFT
255.	HC407	WASHER FOR KNOB SHAFT
256.	2K429	ADJUSTING WASHER FOR KNOB SHAFT
257.	HC410	CONNECTING LOG FOR FEED LIFTING REGULATOR
258.	ZAH-420	LEVER FOR AZAH3-427 (249.)
259.	HC421	PIN FOR HC419 (257.)
260.	HC422	WASHER FOR HC421 (258.)
261.	HC423	FEED LIFTING METAL
262.	HC425	COTTER PIN FOR HC423 (261.)
263.	ZAH-4A9	FEED LIFTING CAM
264.	16B02	SET SCREW FOR ZAH-4A9 (263.)
265.	ZAH-3A4	SHUTTLE DRIVER SHAFT FRONT BUSHING
266.	ZAH 3A5	SHUTTLE DRIVER SHAFT REAR BUSHING
267.	15B05	SET SCREWS (2) FOR BUSHING
268.	ZAH-370	SHUTTLE DRIVER SHAFT
269.	HC1 376B	COLLER FOR SHUTTLE DRIVE SHAFT
270.	15D19	SET SCREWS (2) FOR HC1-376B (268.)
271.	ZAH-378	SHUTTLE DRIVE GEAR
272.	15B01	SET SCREW FOR ZAH-372 (271.)
273.	15B08	SET SCREW FOR ZAH-378 (271.)
274.	ZAH-3A2A	SHUTTLE DRIVE CRANK
275.	HA1B-1	SET SCREW FOR ZAH-3A2A (274.)
276.	HA38D	TAPERED PIN FOR ZAH-3A2A (274.)
277.	ZAH-410	FEED LIFTING SHAFT
278.	ZAH-484	SNAP RING FOR ZAH-410 (277.)
279.	ZAH-482B	DROP FEED ARM
280.	AHA412A	DROP FEED ROLLER & SHAFT
281.	ZAH-498	DROP FEED PLATE
282.	18A05	SET SCREW FOR ZAH 410 (281.)
283.	TA529	WASHER FOR 18A05 (282.)
284.	ZAH-424	DROP FEED SPRING
285.	ZAH-494	FEED LIFTING FORK
286.	15B08	SET SCREW FOR ZAH-411 (285.)
287.	ZAH-496	DROP FEED PLATE STOPPER
288.	08A43	SET SCREW FOR ZAH-498 (282.)
289.	AZAH1-310	RIVIVER
290.	HA3N	DRIVER SPRING
291.	09E01	SET SCREWS (2) FOR DRIVER SPRING
292.	ZAH-393	RACE BODY
293.	ZE378B	DRIVER SHAFT COLLER
294.	15D01	SET SCREWS (2) FOR ZE378B (293.)
295.	ZAH-391A	DRIVER SHAFT GEAR
296.	12D05	SET SCREWS (2) FOR ZAH-391A (295.)
297.	ZAH-3A1	DRIVER SHAFT BUSHING
298.	15D05	SET SCREW FOR ZAH-3A1 (297.)
299.	HA5D01	PUSHER FOR RACE FRONT (RIGHT)
300.	HA5D02	PUSHER FOR RACE FRONT (LEFT)
301.	HA5A1	PUSHER SPRINGS (2)
302.	HC04	PUSHER STUDS (2)
303.	ZAH-304	RACE FRONT
304.	ZAH-307	RACE BODY TOP SPRING
305.	09A03	SET SCREWS (2) FOR ZAH-307 (304.)
306.	ZA1 305A	HOOK
307.	15D05	SET SCREW FOR ZAH-305 (292.)
308.	AZA1 305A	BOBBIN CASE
309.	AHA283	BOBBIN
310.	ZAH-335	GEAR CASE COVER PLATE
311.	ZAH-338	GEAR CASE PACKING
312.	08A06	SET SCREWS (3) FOR ZAH-335 (310.)
313.	AZH2-002-PM	ARM BED ASSEMBLY
314.	HA5A3	RIVETS (2)
315.	HA5A1	RIVETS (2) FOR SERIAL NUMBER PLATE
316.	AZAH2-518	BOBBIN WINDER BASE THREAD GUIDE
317.	HA5D9A	SET SCREW FOR AZAH2-518 (316.)
318.	09A03	WASHER FOR HA5D9A (317.)
319.	09A12	SET SCREWS (4) FOR ZAH2-436 (324.)
320.	18A03	MOTER SUPPORT SCREW
321.	SW090	MOTER SUPPORT WASHER
322.	15A01	HEX HINGE SET SCREWS (2)
323.	ZP1D8	TENSION BARREL
324.	11A03	SET SCREW FOR TENSION STUD
325.	ZP123	ADJUSTING PLATE FOR (327.)
326.	ZP103	CHECK SPRING
327.	ZP107A	TENSION STUD DIAL
328.	ZAH-128A	TENSION STUD
329.	HC115	TENSION RELEASE PIN
330.	HC1N1	TENSION DISCS (2)
331.	ZP1C6	TENSION TWESSER TRAY
332.	ZP1D8	TENSION WASHER
333.	ZA1-103	TENSION PLATE
334.	ZP114	BEEHIVE TENSION SPRING
335.	15A03	NUT FOR TENSION STUD
336.	ZP1D5	TENSION DIAL STOPPER
337.	ZP122	ADJUSTING WASHER FOR ZP125 (326.)
338.	ZAH3-1C5	TENSION DIAL
339.	11C18	SET SCREW FOR TENSION DIAL
340.	12D03	SET SCREW FOR TENSION BARREL
401.	AZA12-9001	ACCESSORY BOX
402.	HA8002	SCREW DRIVER (LARGE)
403.	HA8006	SCREW DRIVER (SMALL)
404.	AHA2A007A	TUNED OIL
405.	ZG8006	CLOTH GUIDE
406.	09C01A	THUMB SCREW FOR CLOTH GUIDE
409.	AZA9015	NEEDLES 214, 224, 238
408.	AZA42-9015	TWIN NEEDLES (2)
409.	AZA1C-156	STRAIGHT SEWING PRESSER FOOT
410.	AZA9017	HEMMER FOOT
411.	HA9019	RULER (2)
412.	ZA9025	CORDING FOOT
413.	AZA9-9028	BUTTON HOLE FOOT
414.	ZA9027	BUTTON SEWING FOOT
415.	AZA9029	QUILTING FOOT
416.	AZA9030	BUTTON HOLE CUTTER
417.	AZA12-9040	EMBROIDERY FOOT
418.	AZA42-1352	NEEDLE PLATE (STRAIGHT SEWING)
419.	AHA232 -	BOBBINS (3)

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